

Notice of Allowability

Application No.

09/660,346

Examiner

Curtis B. Odom

Applicant(s)

BETTS ET AL.

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amdt filed on 8/12/2004.
2. ☒ The allowed claim(s) is/are 2, 4-7, 10, 13, 15-19, 23-25, 27, and 32-34, which have been renumbered claims 1-19, respectively.
3. ☒ The drawings filed on 12 September 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Karen G. Hazzah on October 13, 2004.

The application has been amended as follows:

Claim 17. (Currently Amended) A system to derive symbol timing for a receiver, comprising:

a slicer configured to decode a received signal segment into a discrete data symbol;

a calculator configured to derive a symbol timing phase error based upon the received signal segment and discrete data symbol, and configured to compute an average based upon said symbol timing phase error;

a circuit configured to receive the average and configured to develop a control signal based upon the average;

an oscillator configured to receive the control signal and configured to generate a symbol timing for a receiver; and

a dual eye close structure, a first eye close being coupled to the received signal segment and a second eye close being coupled to an output of a decision feedback

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equalizer, wherein the dual eye close structure is configured to control a switch to remove a signal path between the calculator to the circuit.

Claim 25. (Currently Amended) A system to derive symbol timing for a receiver, comprising:

- an equalizer configured to receive an incoming signal and to produce an equalized signal, the equalizer having a plurality of coefficients;

- a slicer configured to decode the equalized signal into a reference signal;

- a means for updating the plurality of coefficients of the equalizer based on the reference signal and the equalized signal;

- a means for comparing the reference signal and the equalized signal and configured to produce a symbol timing phase error;

- an averager configured to produce an average symbol timing phase error based upon the symbol timing phase error;

- a control circuit configured to receive the average symbol timing phase error and configured to develop a control signal based upon the average symbol timing phase error;

- an oscillator that receives the control signal and that generates a symbol timing signal; and

- a dual eye close structure, a first eye close being coupled to the equalized signal and a second eye close being coupled to an output of a decision feedback equalizer, wherein the dual eye close structure is configured to remove a signal path between the averager and the control circuit.

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Claim 33. (Currently Amended) The system of claim 25, further comprising:
a decision feedback equalizer (DFE) configured to receive the reference signal
and to produce a DFE-compensated signal; and
a subtractor configured to subtract the DFE-compensated signal from the
equalized signal, wherein the resulting signal is input into the slicer.

Examiner's Statement of Reasons for Allowance

2. The following is an examiner's statement of reasons for allowance:

Claims 2, 4-7, 10, and 13 are allowable over prior art because related references do not disclose deriving a symbol timing phase error between a received signal segment and a sliced signal segment using a calculator comprising of a leaky integrator and multiplier; computing an average based on the symbol timing phase error; developing a control signal based on the average; and generating symbol timing based on the control signal. Claims 15, 16, 18, 19, 23, 32, and 34 are allowable over prior art because related references do not disclose deriving a symbol timing for a receiver including calculating a centroid error. Claims 17, 24, 25, 27, and 33 are allowable over prior art because related references do not disclose deriving a symbol timing for a receiver including the use of a dual eye structure.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

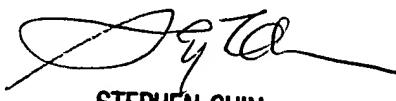
Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
October 13, 2004


STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2000